Abstract

The invention is directed to a spectrometer for measuring submillimeter absorption. The spectrometer may include a solid state exciter generating a submillimeter wave and sweeping a predetermined frequency band, a frequency marker generating unit electrically generating frequency markers, a sample cell to contain a gas, and a solid-state detector detecting a submillimeter absorption of the gas. A spectrometer energizes a solid-sate oscillator to generate a submillimeter wave and to sweep a predetermined band of frequency. The submillimeter wave is introduced into a sample cell containing a gas and frequency markers that are electrically generated during the sweep. Outputs of a solid-state detector disposed in the sample cell are read and recorded as a function of time and with the frequency markers. The recorded outputs of the solid-state detector are converted into a function of frequency using the recorded frequency markers.